

THE
CO-OPERATIVE MAGAZINE,
AND
Monthly Herald.

Nº 12.—NEW SERIES.

FOR DECEMBER, 1827.

CONTENTS.

BASIS OF CO-OPERATION	page 531
UNION EXCHANGE SOCIETY	547
WATER-POWER AND EDUCATION	550
THE LATE MR. ABRAM COMBE, (<i>concluded</i>)	560

<i>Inventions and Improvements.</i>		
Mode of Preserving Cabbages		Steam Engine
during the Winter	570	Clothes
Potatoes	570	Potatoe Flour
Extraordinary Increase of a grain		The Alternation or Succession
of Wheat	570	of Crops
		Steam Coaches

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AND J. MORTIMER, PHILADELPHIA.

NOTICES.

The Public Meetings are held as usual on Thursday evenings at Half past Eight o'clock, at the Society's rooms, 36 Red Lion Square.

"Philadelphia Co-operation" was set up for this Number, but want of room compels its postponement to our next.

The Review of "Labor Rewarded," we are almost ashamed of so long disappointing our readers in not giving, but we still more strongly than ever recommend the little work itself.

Our own article on "The Present State and Prospects of the Country," we are obliged to defer, as well as our Brussels Correspondent's letter.

We had intended for our present Number some extracts from the interesting little pamphlet, "The Present State of the Labouring Classes in America;" as well as from "Carey's Emigration to America;" and also some notice of Edmonds's excellent work on "Practical, Moral, and Political Economy;" but we are forced to defer all.

We beg to thank the person who sent the notice of Mr. Hague's Crane, and are sorry it did not arrive in time for our present Number; but it shall appear in our next.

* * The Magazine is sold at the Brighton Co-operative Store.

THE
CO-OPERATIVE MAGAZINE,
AND
MONTHLY HERALD.

No. XII.

DECEMBER, 1827.

VOL. II.

BASIS OF CO-OPERATION.

To the Editor of the Co-operative Magazine.

SIR,

Brighton, Nov. 7, 1827.

YOUR Correspondent of last month on the above head, Brutus, closes his reasonings with what I so heartily approve, that I wish to make it the beginning of mine. He states that "the end to which Mr. Owen and the Co-operative system originally did and ought now to aim, he takes to be the improvement and, if I may so speak, the perfection of the human race." Brutus then inquires: "Is Co-operation more likely to be a cause or a result of such improvement?"

Now we may safely assume that every change in our mode of action is the result of a change in our mode of thinking. And we cannot hope that thinking beings will adopt any proposed change in their mode of action without an expectation that they will consider and approve the new ideas, or theory, of the mode recommended.

As we may differ about what is meant as the "improvement or perfection of the human race," let us understand it to mean such a state of human existence as will permit to the greatest possible number of human beings the longest term of full development and exercise for the powers of their *organic* and *intellectual* life.

The Co-operation we speak of, however it be the supposed consequence of a new mode of thinking, may be viewed, I humbly suggest, as a first step to get out of the road to that abyss of commercial

distress, which, as a people, we are threatened with ; as well as a first opportunity in the life of the human race to accommodate social institutions to first principles, which have obtained the high character of divine precepts — institutions that may allow human conduct to be consistent with the greatest advance of human knowledge or reason. Such, it seems to me, would be no small improvement in our condition ; and that change would be, as I have just remarked, but the first step in a course of perfection, that should end only with the extinction of the human race itself.

You will, I think, agree with me, Mr. Editor, that little need now be said to excuse, in the " adherents to Divine Revelation," some share of attention to dancing and singing, in which the human organs may be moderately exercised with a sensation of pleasure contributive to health : and this without upbraiding the Orbistonians, as making it their great aim to attain only those advantages now enjoyed by a small portion of society. Excess in this particular would indeed be equally injurious to them as that degree of asceticism which Brutus appears fond of.

I am, Sir, yours, &c.

P. S.

Allow me to observe, that in an advertisement in the Brighton Gazette, the first paragraph of the article Co-operation contains the word *effective* instead of *valuable*, as the latter relates to market price.

P. S.

ADDITIONAL REMARKS.

Though our Brighton Correspondent's answer to Brutus on the basis of Co-operation, we think perfectly just and satisfactory on the points which it takes up ; yet as the remarks which we had prepared on the subject, are not, we imagine, rendered altogether superfluous, and as Co-operation is the order of the day with both our friend P. S. and us, we shall bring them to co-operate with his.—ED.

Of the abilities and good intentions of our Correspondent—we hope we may say our friend—Brutus, we have a very high opinion : and yet we cannot help thinking him—we trust he will not be offended or hurt at our saying—either strangely bewildering himself, or strangely endeavouring to bewilder others, on the present occasion.

From his seeming condemnation of Mr. Owen's theory and practice, part of that theory being Co-operation, while at the same time he speaks of Co-operation in such favourable terms in other places,

we can scarcely judge whether he would recommend or reprobate, whether he approves or condemns it.

Of Mr. Owen, we have often said before, and we now say again, that we never considered him either as the author, the infallible high-priest or the prophet of the Co-operative, or Communal,—or as accurately as either, the *social* (for it is the only *truly social*) system; that we never viewed him as either the Magnus Apollo, the Pythagoras, or the Mohammed, by whose inspirations, whose “ipse dixit,” or whose revelations, we should be entirely and implicitly guided. We certainly think him one of those who will have been of the very greatest service to mankind, by his sounding, as it were, the trumpet of resurrection to this system, and awakening it to motion and to action from the state of torpor in which it so long slept,—calling it from the tomb, if not of oblivion, yet of inattention, obscurity, and neglect, to which our present boasted Civilization consigned it. We consider that his zeal; his unshaken firmness; his indefatigable, unflinching and active perseverance, under good report and evil report, under unfavourable as well as favourable circumstances—under thwartings, difficulties and disappointments; his immoveable placidity of temper; his freeness from even a shade of rancour, revenge, malignity, or harsh feeling towards any person; and his devotion of so much of his time, his labour, and his property to teaching and promoting the System, as well as his knowledge of its principles, and his just, at least theoretical, views of the fundamental springs of human action;—we consider that all these claim for him, at present, every attention, and will have rendered him hereafter one of the most profitable workmen in the vineyard of human welfare.

But every point of his theory, or every thing which he connects with our system and thinks necessary to it, we have not adopted; nor do we think every part of his practice the most judicious. Indeed, on the contrary, some of his practice we imagine very prejudicial to the advancement of our system. We think his always setting himself up as the author, the very Alpha and Omega of the System, when he could bring forward in support of it so many great names, looked up to by every eye as among the lights of the first magnitude and brilliancy of the mental firmament; his charging all mankind, past and present, without exception of any but himself and those who have caught up the rays of his irradiation, with being buried in the most gross ignorance, in Cimmerian darkness, when he has not

put forth one notion or one idea, which was not often expressed and promulgated before him ; his never (at least of late) adducing any instance of the former existence of the System or any part of it, notwithstanding his continual assertion of his basing his plan on facts and experience, when he could readily have found many such instances ; his religio-phobia, when he could easily prove that the Christian religion most expressly commands and most continually inculcates, as the first thing necessary, the practice of our System ; his vague definition of truth, as "what is *always* consistent with itself," when he must know that the test of this definition, the "always", or the future as well as the past, cannot be applied till the end of time ; his loose generalities about truth, instead of elucidating by facts the particular truths which are requisite, when he must know that there are many truths, the knowledge of which is not at all necessary either to carrying the system, which he advocates, into execution, or to human happiness,—else no man could be happy till every secret of nature was known ; his always endeavouring to make every step of his appear the "wisest, virtuousest, discreetest, best," and every reverse and disappointment seem what he had foreseen, wished and planned, when the contrary is well known to numbers—all these inconsistencies, we think, have raised up many obstacles to the cause, which he so strenuously exerts himself to promote, and have much retarded its advancement.

Some of our friends, for whose understanding and good qualities we entertain the highest respect, have said to us, that Mr. Owen should be held up as without change and without error. But with great deference we venture to differ equally from them on this side, and from Brutus on the other. It is not, that we think the precise cause of truth demands our pointing out his defects or failings ; for, though we hold that truth is generally, as honesty is always, the best policy ; and that a lie, which we define "a conscious falsehood to injure some person," should never be told,—we are not such zealots, as to maintain that all truths should be spoken at all times : as for instance, that we should tell the robber where we have a purse of gold concealed ; exclaim to the ferocious and remorseless tyrant with the scymitar brandished at our defenceless necks, that we would dethrone him if we could ; or inform the lawless and atrocious invader, of facts, his knowledge of which would tend to the subjugation of our country, and the destruction of the wisest and most virtuous of our country-

men. But we conceive the Cause of Utility, that is, of benefit as well to himself as to mankind, demands that we should speak of Mr. Owen as we do. While we gladly assert that he has more than ordinary good qualities and on most occasions correct opinions,—and certainly, if we “nothing extenuate, we naught set down in malice” concerning him,—we conceive that “the honeyed tongue” may drop its luscious and inebriating liquid upon him too profusely for his own good, or that of the cause in which he so diligently and with such effort labours; and that a little sprinkling of the essences of simple truth and candid frankness, though perhaps not such “aspersion sweet” at the moment, may be more salutary. We have heard even some of our Co-operative brethren hail him in his hearing “the true Messiah, the real Saviour of mankind,” while we have seen him hear the hailing with more than no dissatisfaction: and we blushed while we heard and while we saw. Indeed we believe he almost persuades himself, as he seems to wish to persuade others, that he is free from vanity as well as from liability to mistake or to any error; and if what we conceive his vanity were not injurious to himself and, more especially, to the cause of which he is so eminently serviceable a disciple, we should not disturb the harmless and pleasing intoxication. Many good and many great men were very vain. Cicero’s excessive vanity, as indeed this failing of that great and good man every one perceives, even he himself acknowledges: and Lord Bacon—and who had more sagacity or penetration than Lord Bacon?—says that Socrates was vain-glorious:—but who will deny that Cicero and Socrates were two of the greatest and most splendid luminaries of the moral and intellectual horizon? Certainly they (and particularly Cicero, though in perceiving and acknowledging his very failing he shows a more than ordinary greatness) would have been greater, if without vanity—if, in self-estimation, they were like the victorious Marlborough, who counted himself a good general only because he committed fewer blunders than his adversary; or the admirable Newton, who reckoned himself only a playful child picking up a curious little shell or pebble on the shores of the immense ocean of truth. And Owen also would be greater than he is, if similar to Marlborough and Newton in the respect alluded to; though in our view, he is greater than either, especially much so than the former, in real utility, or substantial benefit to mankind. Yet if what we conceive his vanity were not more injurious than even Cicero’s, we should hesitate much,—though indeed even as it is we

have hesitated much, before we could bring ourselves to touch it. But when it is rendering him almost a fanatic and a persecutor—for scepticism, infidelity, deism, and atheism have their fanaticism and persecution as well as religion, credulity, superstition, and bigotry,—when it is making him nearly as much a sectary as any of the religious sect-founders whose zealotism or imposture he so loudly deplores ; when it is driving him against his bias to consider as unfit for community, however otherwise well qualified, any one who does not think on the subject of religion as he does ; when it is causing him, in order to obtain the vain-glory of being considered the primary founder or creator, the source and centre of a system, to border sometimes on the shoals of falsehood, and to deceive himself and others in their views of facts and transactions ; when it is occasioning many to attribute to the impracticability of the system the failures or the tardiness of success, which should be imputed only to his want of perfect management ;—when such are its effects, we conceive it useful to hazard the imputation of vanity to ourselves (and how can we be sure but we deserve it ?) by the endeavour to remedy, or at least allay the evil.

We allow he at one time adduced the instance of the Shakers, and re-published the plan of Bellers. But did he at any time bring forward or even allude to the authorities or instances of Minos, of the Cretans, of Lycurgus, of the Spartans, of Plato, and so many philosophers down to Plutarch ; of the Essenes, of Christ, and the first Christians ; of Sir Thomas More ; of Montesquieu ; of Condorcet ; of the Jesuits of Paraguay and their Indians : or of very many other authorities and instances which could easily be recounted ? And has he not these many years dropped any allusion to Bellers ? though his modification—for it is but a modification, undoubtedly a superior one—of the system of Minos, Lycurgus, Plato, and Sir Thomas More, is nearly a literal copy of Bellers's.

Now we hope that neither Brutus, his co-mortificationists, nor any others, will consider us as either Mr. Owen's worshippers or mere echoists, though we certainly confess ourselves his high esteemers, and in many respects disciples ; and that no one will attribute to the System either his or our mistakes or errors. Either his or our errors or mistakes, however, we do not wish overrated ; and as little do we desire errors or mistakes, either his nor ours, to be charged to either him or us. Thus, then, expressing what we conceive our just claims, we shall proceed to consider Brutus's arguments.

He begins the assault by opening a tremendous fire on "Self-interest." Indeed his self-phobia seems as great as the religio-phobia of any infidel, or the hydro-phobia of any mad dog. If our former Correspondent, Junius, called "self-interest the only bond for a Co-operative Community," we venture to assert that he did not take it in the same sense of "selfishness," or what is commonly understood by selfishness, as Brutus seems to do: and we do not recollect that either the Orbistonians or the London Co-operative Society ever said that it was the only bond.

There are two kinds of "self-interest" or "selfishness;" and they differ as widely as any two things can having one particular in common, as, rivers do that flow north and south from the same source. They both, we allow, have a feeling for self; and of this feeling it is impossible for human nature to divest itself; nor does any law or precept, either of religion, morality, or policy, command or recommend to it to do so. The Divinity itself, the Religionist does not suppose without this feeling; for the Divinity acts, creates, and governs, Religion says, for its own glory; and if the example of the Divinity is to be followed, how can a want of this feeling be recommended; or can it be conceived that the Divinity would be more perfect without this, and that man should be more perfect than God?

One kind of self-interest or selfishness is exclusive, and bids its possessor to act in every thing and on all occasions without regard to any one else, and to grasp to itself, at the expense of any or every other, if necessary, any enjoyment or gratification, however momentary or trivial. This we fully grant is "not only the principal," but "the only *immediate cause of division* among men,"—is indeed the immediate "root of all evil." This is what we call, and have always continued to call, or consider the same as the desire of individual acquisition and accumulation; and this we as sincerely and as earnestly deprecate and dissuade from, as Brutus or any other person can. But it is only the immediate, not the primary cause. The primary cause is want and ignorance. If we did not want, or if we knew how to satisfy our wants as readily and abundantly as we could wish, without the expense of any other person, or if we knew that the indulgence of this exclusive self-interest or desire would be as much at our own expense as it always proves to be, we would not seek the indulgence.

The other kind is enlarged and comprehensive, and bids us comprehend or combine our own satisfaction with that of others. This tells us that combining the satisfaction of both is the best and surest, and indeed the only, way of attaining that of either. This springs from experience and knowledge, as the former kind from want and ignorance; and is the firmest bond, and a fully firm and sufficient bond it is, of union in a Community. It is the guide and guardian of every social feeling, of every virtue, of every perfection. It bids "self-love and social be the same;" and is the fostering genius of abundance, harmony, and mental, moral, and muscular improvement, of indefinite progression, and indefinite degree of happiness.

"It must not be answered," Brutus says, "that true self-interest is the interest of all, is the general good; for if it be, why hold out the notion of increased self-gratification to each individual to enter a Community?" And why should it not be thus answered? It is the precise answer, perhaps somewhat otherwise expressed, which we would give, and which reason and common sense would give also. What the latter part of the sentence assigns as a ground why it should not be an answer, is no ground at all why it should not; on the contrary, it is a ground for the direct reverse.

If each individual of the community had increased self-gratification, the entire body of the community would have it; and it would thus follow of course if increased self-gratification is true self-interest, that the true self-interest of each would be that of all, or of the entire body of the community. What stronger ground, then, or more powerful motive or reason to induce any individual to enter a community could there be proposed?

No person does any action without a motive of self-gratification, mental, or corporeal; and we at least as frequently do more to gratify the mind than the body, as we do the reverse. In giving all one has to the poor, and leaving himself in abject poverty, and thus gratifying his sense either of duty or charity, a person gratifies his mind. The religious martyr in giving his body to the flames for the love of God, gratifies his mind in gratifying his sense of duty. The warrior who sacrifices his ease, his safety, his domestic endearments, and too often his sense of justice, to his love of what he conceives glory, gratifies his mind in gratifying that love. The patriot and the philanthropist who devote their fortunes, their exertions, and their lives in the

service,—the one in that of his country, the other in that of mankind,—gratify, each his mind in gratifying his desire of benefiting his country the one, and mankind the other.

Nor is the desire of bodily self-gratification moderately indulged in, so heinous as Brutus seems to consider it. At least neither religion nor wisdom, nor of course morality pronounces it so. Solomon says, “there is nothing better for a man than that he should eat and drink, and make his soul enjoy good in his labour.” Christ, it is written, was present at the wedding-feast at Galilee, and even changed water into wine for the guests. He commands “the poor, the maimed, the lame, the blind, to be called to the feast ;” and he does not command them not to gratify themselves with the good food, but on the contrary intimates by inference that they should.

We indeed allow that bodily or sensual gratification to excess cannot be too strongly dissuaded from, and should by all judicious means be prevented. But such gratification is only the gratification of the moment, and is followed by a severe retribution of pain, disease, or suffering of some kind. It is a true saying, that “luxury has slain more than the sword.” Such bodily gratification, however, is not that contemplated, or held out as an inducement, by the advocates of our system.

Yet we do not reckon every thing luxury, which is not absolutely necessary to life, or even to health and vigour. Any bodily enjoyment or gratification which is not injurious to health or vigour, or does not hinder a greater bodily or mental gratification, we consider every authority, either philosophical, moral, or religious, fully allows. We are corporeal as well as mental beings : while if it was God gave us a mind and powers of gratifying that mind, it was he also gave us a body and powers of gratifying that body ; and why then should we not gratify the one as well as the other, as far as may be without injury to either ? If, likewise, the body can be indulged too much, so can the mind also, as we have just seen in the instance of the warrior, who too often tramples on all the laws of justice and humanity in pursuit of his mental gratification, Glory. The scholar, who spends his days and his nights over his books at the expense of his health and his life, and to the neglect of his family and fortune, indulges in mental gratification too much, as well, though not as grossly or bestially, as the glutton or the drunkard does in bodily or sensual.

To mental gratification certainly, as the purer, the more refined

the more elevating, and more permanent, we would have the preference given ; but not to the too great neglect of the bodily or sensual. Many of our enjoyments combine both gratifications ; as music, drawing, painting, sculpture, poetry, which at the same time delight, some the eye, some the ear (bodily organs), and the memory and imagination (mental faculties). Even architecture, gardening, planting, laying out grounds, agriculture, and others of a like nature in some degree combine both ; and if the latter are more bodily and less refined, they are not less necessary or less wholesome.

But Brutus seems to think that we should not seek gratification at all, and that we should do nothing for it. He says ; "All the causes of failure at New Harmony, as stated in your last Number, have arisen from *Selfishness* alone. So far then from its being proper to make *this* the basis of Co-operation, I boldly declare my conviction, that it will be useless for any one to attempt the formation of a Community, till every spark of this consuming fire is extinguished within him ; and it will be fatal to admit at the commencement one individual, who is not likewise urged forward only by the motive of doing good ; or in less equivocal language, whose whole life and powers are not devoted to the service of God. This character of desire to do the will of God only is the principal difference between Mr. Owen and other men ; and is what makes his individual exertions so marked, although he does not profess this source."

We do not allow that there has been a *failure*, though there certainly has been a *check*, or perhaps *retrogression*, in *one* instance, at New Harmony. And we think that even in that one instance, there were other causes, along with *Selfishness*, that is **EXCLUSIVE** *Selfishness*, for the retrogression. We believe there were want of machinery and want of proper arrangement. It is true, in our opinion, that notwithstanding these wants, Co-operation would have succeeded in that instance, only for this exclusive Selfishness. But on the other hand, we conceive that even with the degree of this selfishness which existed there, Co-operation would have succeeded in that one instance, had there been sufficient machinery, or especially had there been good arrangement.

Into this point about New Harmony, we shall not, however, enter at present further. But the Selfishness of which we have just before been speaking, that is, the narrow and exclusive selfishness, we utterly, as we have often already said, reject as a basis of Co-opera-

tion ; nor can Brutus do so more strongly. Indeed this selfishness is perfectly opposed to a thorough Co-operation, as it divides, separates, and sets in array against each other the interests or supposed interests of all, by causing every person to take as much of any thing, labour or operation as well as any thing else, from, and to give as little to every other as he can.

The other, the enlarged, enlightened, and comprehensive selfishness, however, we maintain is a perfectly sufficient bond and basis of Co-operation. It shows us what reason and experience show, that the more we do or operate for and benefit each other, the more we do or operate for and benefit ourselves ; and it thus makes our feelings for ourselves and others glide into each other, amalgamate, and unite by association, till we literally obey the great commandment, "Love thy neighbour as thyself." If we do so then, the selfishness that makes us feel and work or operate for ourselves, makes us do so likewise for others ; and thus it makes us obey that other fulfilment of the law and the prophets, "Do to others as you would they should do to you." This therefore, we re-assert, is a perfectly sufficient bond and basis of Co-operation, as it is of universal benevolence, and of fulfilment of the great commandment and rule of religion.

But Brutus will not be satisfied with this, if our "whole life and powers are not devoted to the service of God," and "all our desire is not to do the will of God only." And is not such the result of this selfishness ? How can a person of Brutus's mind not perceive it ? What else is "the service," what "the will of God," but "to do to others as you would be done to," and "to love thy neighbour as thyself ?" Is not this what is inculcated every where, enforced most incessantly throughout the New Testament ? Is it not said to be the result of faith, and what is above faith and hope ? "And there be three things," says the Testament, "faith, hope, and charity ; and of these charity is the greatest." "*Above all things,*" says it again, "put on charity, which is the *perfection* of the law." And again it says, "I will show thee my faith by my works ;" that is my works of charity, which are the only perfect demonstration or testimony of true faith, and without which "all is but like sounding brass or a tinkling cymbal, and availeth nought." And what is faith, that is the living faith, faith that is worth any thing, but the belief that this is the service and the will of God ? Such certainly was the early Christian martyr, Justin's sense of it, who said that a man,

who does as has been written, is a Christian, even though he be an Atheist.

Still, however, Brutus is not satisfied, while we have any feeling whatsoever for ourselves or for others, and while it is not solely for God we feel—for a Being, who as all-powerful, all-wise, all-good, and all-happy, must be totally needless of our feelings; who cannot be made the shade of a shadow more perfect or less perfect, more happy or less happy, by any thing we do or feel.

Brutus and his transcendental even hyper-Pestilozzian co-subtilizers, will not be satisfied with our fully performing the service and fulfilling the will of God, if we do not do so without feeling any gratification from it. This, we imagine, is their sense of being a perfect Christian:—but is not this being an ultra-Christian, being more a Christian than Christ himself, or rather being so much beyond a Christian as to cease to be a Christian altogether, and as the wise Bacon says, “so to consider Christians, as to forget they are men?” Why does God or Nature give us appetites; why does he make us feel hunger or thirst; why does he make it impossible for us to answer those appetites without feeling a gratification? Would Brutus wish us not to feel what God and Nature force us to feel? Would he and his co-intricacy-mazeites, his co-cobweb-spinners—we hope to give no offence, or cause no shade of hurt-feeling, for we certainly have a high opinion of both Brutus’s intellect and benevolence,—would they, instead of binding our duty by our true self-interest, instead of “binding nature fast by fate,” dissolve the union, and set them at variance? Christ did not do this; for he knew Nature too well. He knew that if we had no motive of gratification, we should be entirely motionless; if indeed we were not mere automata, or without a will. He knew that we could not will or wish, without willing to have our will or wish performed, and therefore gratified; for indeed the very essence of will is a wish to be gratified; that is, will, and wish to be gratified, are the same.

Christ knew that we could not possibly even love either God or man, without feeling a gratification; and that when we ceased to have a wish for gratification, we ceased to have a wish or any desire for existence; and that accordingly, when we cease even to hope for gratification, we make ourselves cease to live or we kill ourselves, if the kindly hand of nature does not interpose and snatch us from a weary world and suicide. He would not command impossibilities; and

he therefore never commanded us not to love ourselves or not to wish for our own gratification ; but, on the contrary, he commanded us to love others as ourselves, and thus consequently commanded us to love ourselves.

Nor did he command us not to love ourselves as well as possible ; but to love others, so as that we should most gratify, or yet further satisfy our love for ourselves, and most promote and best secure our own happiness. He knew that it was only in the mode, not in the desire of gratifying our love for ourselves, we erred and went astray. Accordingly about the mode it is that he always directs and instructs us. He always even proposes to us gratification, satisfaction, or happiness, (which last is but a continued and complete gratification or lively satisfaction,) as a reward for fulfilling our duty. He says, "Blessed are the poor in spirit,"—that is, those who do not set their hearts on money or false riches,—"*for theirs is the kingdom of heaven ;*" that is, they shall be rewarded with the kingdom of heaven, with permanent happiness. "Blessed are the meek ; *for they shall inherit the earth,*" that is, the earth shall reward them with enough to satisfy, or gratify and content them. "Blessed are they which do hunger and thirst after righteousness ; *for they shall be filled.*" "Rejoice and be exceeding glad ; *for great is your reward in heaven.*" "Seek ye first the kingdom of God and his righteousness ; *and all these things shall be added to you :*" that is, you shall be *rewarded* with the addition of all these things, if ye seek to do the will of God by being righteous to one another, and doing as you would be done to.

Now Brutus, we think, must allow that he goes beyond Christ or religion, as well as beyond common sense and reason, when he wishes us not to desire our own gratification.

On the heavy charge which he brings against the Orbistonians, and endeavours to tip with such keen ridicule, we imagine he could easily be so answered, as that he would as soon even himself cut a caper as attempt to trip up their heels any more. Dancing is not only a graceful and exhilarating amusement, but a wholesome and invigorating exercise ; and music, if he were not such a gratification-abominator, we would tell him, is not only an innocent but a refining gratification. He says, "he is sure that the poor in London spend more for gin in one day, than it would cost them to dance to weariness every day in the week." Will he say then, that the poor do well or wisely in this ? If he does not mean so, this observation is quite

irrelevant ; and we cannot imagine he does. It does not follow however, that because they learn to dance, they must dance "to weariness." As well may he say, that because they eat, they must eat to surfeit. They may indulge in even a "Highland fling," without flinging their health away, or yet their wit, as we are forced almost to think our good friend Brutus does on this occasion.

The weightiest part of the accusation, however, he seems to consider, is their wishing for what they conceive are advantages. "*The great aim*," he says, "then is avowed to be the attainment of those advantages now enjoyed by only a small portion of society. So blind," adds he, "or so far from envy am I, that I neither see the portion of society, nor hear of the enjoyment." And can the microscopic hyper-idealist be so blind, as not to see that the small portion alluded to is the wealthy portion ; or does he, can he indeed, conceive that this portion has no enjoyments but those which the large and poor portion has ? Is there no enjoyment in a good house, good clothes, good fire to keep out the driving tempest and the freezing rigours ? is there none in good food, good drink, a good bed,—especially if after a daily sixteen hours' exhausting toil ? If he never himself experienced the want of those good things, Lear could inform him that there are those who experience it. Lear's living picture would make even persons who never before heard of such wants, almost feel them, when he asks,

"Poor naked wretches, wheresoe'er you are,
That bide the pelting of this pitiless storm,
How shall your houseless heads, and unfed sides,
Your loop'd and window'd raggedness, defend you
From seasons such as these ?"

He adds :

"..... Take physic, Pomp,
Expose thyself to feel what wretches feel ;
That thou may'st shake the superflux to them,
And show the heavens more just."

And are not fine works of genius, fine specimens of poetry and prose, fine music, fine paintings, fine statues, fine gardens,—are not good horses, good carriages for a long journey, good accommodations on a long voyage, sources of enjoyment which the poor have not ?

It does not follow, that, because many of the wealthy indulge to excess in those good things, and most are made unhappy by the pos-

session of them, the same effects would follow from them under other circumstances. If those good things were common to all, they would not be the occasions of such bodily or mental evils, such disease and pain, such care, anxiety, jealousy, and anguish to any one, as they are at present to most of their possessors. They would, on the contrary, be to all parties the occasions of much harmless enjoyment, of much refreshing and wholesome gratification. Why then should not the attainment of them be an aim, though not "*the great aim*," of the poor? "*The great aim*" certainly should be, both an exemption from the mental and moral evils, the bitter and exasperated feelings, the corroding and tumultuous passions, the vices and crimes which "one incessant struggle render life," in the present state of civilization, and an indefinitely progressive advance in the mental and moral blessings of intellect, science and wisdom, of peace, tranquillity, harmony and love, of knowledge, virtue and happiness.

Mr. Owen is now attacked, because he "tries to work upon the circumstances, instead of working upon the men's minds, or rather letting them work upon themselves; in trying to control those things which Mr. Owen himself declares to be the *Controllers*, and to resist that which he asserts to be irresistible."

Here, we conceive, Brutus is entirely bewildered, or endeavours to bewilder. Mr. Owen tries to work both upon circumstances and upon men's minds, and also to let or even to make the minds work by reflection upon themselves. He never, if we remember right, said that circumstances were so uncontrollable as to be unchangeable. It does not follow that because a certain concurrence of circumstances is uncontrollable and irresistible by the person on whom it acts in full force, others on whom it does not act either at all, or with such force, cannot change it. A torrent irresistibly hurries away the individual who is under its collected and rushing fall. It does not follow that others, who are above the fall, may not be able to lessen its power by dividing its streams; or effectually and entirely prevent its power, by entirely changing its course. Then the person who would have been hurried by it to destruction, had it been let roll on in its unabated violence, will be safe, and may be able to turn aside another torrent. The united waters of the torrent are the circumstances that irresistibly bear away the individual. But if we could by any circumstance add, suppose tenfold, to the individual's powers of resistance, as by infusing into him tenfold strength, or by placing before him some strong barrier; or if

we could diminish the force of the waters nine-tenths, the individual could and would successfully resist. If we enlighten a man who has been hitherto ignorant and addicted to many vices, and powerfully enforce on him the consequence of those vices, the circumstance of our doing so will awaken his energies, and make him not be led away by those vices any more.

Such is Mr. Owen's theory: and his practice, instead of being "in direct opposition to it," is, as far as he is allowed by circumstances (the consequences of the habits and feelings impressed on him by his education in the present system of civilization included) in accordance with this theory. How "this theory," as Brutus says, "stands, at every step, in the way of a perfect practice," we do not see, nor does Brutus attempt to show or even lead us to infer; if indeed he does not mean that absolute perfection—that perfection, which we conceive of God—is unattainable; and that as great an approach to comparative perfection cannot be attained at present as will be possible hereafter. If he means this, we allow it; and indeed we have always ourselves asserted it. We have ever maintained that our advancement would be progressive, and indefinitely so, during the existence of the human race. This, indeed, is what we wish to be universally allowed and acted on; and how this can be disallowed by any one, who grants any power to education, we can scarcely conceive. If education has any power, the better the education, the better the educated person will be; and, of course, the better or more adequate the educating person is, the better will be the education. If, then, it makes one generation better than the preceding, that one will be more adequate to educate, and will, consequently, make the succeeding generation more adequate than itself; and thus generation after generation will be progressively advancing in improvement or comparative perfection.

But Brutus asks, "in what this improvement or perfection consists?" We answer, "In the fullest development of the bodily powers, and of the mental and moral faculties; because this will be the attainment of the greatest happiness*." If this development were without any connexion with, or opposite to, happiness, it would, in the first case, be no improvement or perfection; in the other, it

* This is nearly the same as our able Correspondent P. S.'s answer on the point.

would be opposite to improvement or perfection. Happiness, religion supposes, is the central perfection of the Divinity; and indeed without it, reason says, any other perfection, or what is considered such, would to himself be useless. Without some degree or portion of happiness, it would be better either for God or man, or any other being, not to exist.

Brutus inquires; whether "Co-operation is more likely to be a cause or result of such improvement." It may, we answer, be a cause in one instance, and an effect in another—be mutually cause and effect. To have it established, there must be some improvement on what existed before; when established, it will produce a great improvement on what exists at present: and that improvement will be like vigour and exercise: exercise produces vigour, and vigour produces exercise. Let it therefore be brought into effect as soon as possible.—EDIT.

UNION EXCHANGE-SOCIETY.

[Meeting nights, Tuesday evenings 8 o'clock, 36 Red Lion Square.]

To the Editor of the Co-operative Magazine.

SIR, 36, Red Lion Square.

YOUR previous Numbers having communicated the existence and progress of the above Society, I am directed to inform you that we continue every succeeding month, gradually but not rapidly, to increase both in numbers, amount of transactions, and variety of supply; which brings on, as a natural consequence, an increased demand: and our supply at this present time embraces some of the first necessities of life; such as bread, flour, cheese, bacon, butter, eggs, shoes, clothes, brushes, umbrellas, tea, blacking, bookbinding, soap, candles, and various other things, more of which we still hope to be constantly introducing.

At a time when a spirit of inquiry is afloat, and some of the operative classes are forming Societies under the title of "Societies for Bettering the Condition of the Working Classes," it may not be claiming too much from the patience of such of your philosophical readers, whose benevolent philanthropy would encompass the globe, as may

421

be disposed to consider our puny efforts too trifling to be at all useful in the mighty change which they contemplate, and the full attainment of which no one more ardently desires than myself—at such a time it may not be claiming too much from their patience to bear in mind, that large numbers and extensive operations are made up of many small ones: while an account of practical proceedings,—however small their commencement, if their plan is capable of extension, as ours is to an unlimited extent, not stopping short in its progress of any thing Mr. Owen even contemplated—cannot, I hope, be unacceptable to such of the labouring classes as are anxious to inquire and find out the means of interchanging their labour with each other: for by collecting information from the various practical methods which are had recourse to, and observing which produces the best results, they will be enabled to shape their future proceedings with the advantages which experience shall point out. It is not our wish to call forth comparisons for any other purpose than to add to the public stock of knowledge such information as experience from time to time may furnish: and we shall be most happy to receive any advice and instruction, which any person may be kind enough to favour us with.—For the information of those, then, who may not previously be acquainted with our proceedings, I shall here state them: they are very short and simple, and are as follows.

On the first meeting in every month a new list of members is made out; when each is called upon for 10 per cent upon whatever he may have sold the preceding month. After the collection of this, and the payment of the expenses of the meeting place, (which expenses have hitherto through the kindness of a member never exceeded 2s. 6d. per month,) the remainder is then equally divided among the whole,—thus creating one common interest between buyer and seller; for the buyer, if he has no opportunity of selling, is notwithstanding equally eligible in the participation if he chooses to become a member, and it costs him nothing to become so, but on the contrary he must gain.

Thus, then, we have one method (and, as it at present appears to us under existing circumstances and feelings, the best that can be adopted, we must adhere to it until we are shown a better, when we shall willingly embrace it) of exchanging our labour as far as we can, and the facilities for doing which will increase as we become more numerous. It appears to me, Sir, it would be well for the working

classes to turn their attention to this and other methods of exchanging their labour and mutually supplying each other's wants, instead of interesting themselves so much, as has been the popular custom to do, about what they have hitherto considered the importance of Foreign trade. Whilst such an immense market in their own wants remains unsupplied at home, a very large portion of their labour is annually sent into the Foreign market—And to obtain in exchange *What?*—very little of *what* they themselves consume! For if we except tea, sugar, and tobacco, very little comes into their possession: the wines, the silks, and other costly and frequently useless things get entirely into the possession of the unproductive or idle classes; and consequently as far as they, the labourers, are concerned, the immense quantity of otherwise useful labour is exchanged for trifles, and thus becomes to them lost, and is almost entirely thrown away; and may as well, for any equivalent they obtain, perish in the sea.

But, Sir, as I have already, I fear, trespassed too far, I will conclude by just offering one reply to an objection which some of our Co-operative friends are in the habit of making to the plan we have introduced, of dividing for temporary purposes, our accumulation and commencing anew every month, instead of forming a Co-operative Fund, as mentioned in an outline of our plan in your Fifth Number, New Series, page 230. In doing this, I have only to observe that we are following the advice of our leader, Mr. Owen: we have adopted it for no other purpose than to gain by time, experience and knowledge to select our materials for future operations. If without this previous knowledge we commenced accumulating a fund, any member now joining would have a claim and interest in the disposal of such fund, whether the inclinations or capabilities of the parties should be suitable or not for a joint and entire union of all their collected efforts. But we can now either unite or separate without inconvenience to any party whatever; and in the mean time we are obtaining a knowledge of each other by means of an union of interests, while our funds will not be, as in too many cases they have proved, the germ of discord, and thereby become instrumental in defeating the object they were intended to promote.

As, then, we shall in all probability, (unless the Society should see reason to change the present proceedings,) practically understand and agree in the object to which our funds will be applied, at I hope no distant day, we shall determine to have a Community. For

difficult as the raising of funds sometimes is, it is, from want of practical knowledge, frequently more difficult judiciously to dispose of them.

I beg leave to apologize for the length this has already extended to, and remain, Yours, &c.

November 15, 1827.

W. K.

WATER-POWER AND EDUCATION.

To the Editor of the London Co-operative Magazine.

SIR,

PROFESSING, as the advocates of Co-operative industry do, to instruct mankind in the best mode of directing their energies to the production of wealth, as one of the essentials of happiness, it is particularly incumbent on them, where they cannot give knowledge, not to lead astray. Before a writer undertakes to instruct others in the application of water-power and mechanics, he ought surely to take the trouble of acquiring himself the elements of those most useful branches of knowledge and most essential to co-operative industry.

I read with sorrow the following passage in the 432nd page of the New Series, of this month, of the Co-operative Magazine:—

“Probably this could be more cheaply effected (than by wind-mills, steam-engines, &c.) by water-mills *supplied by pumps*, as pumps could be sunk deep enough on any ground to produce water. Three or four pumps on 500 acres, with reservoirs and works to convey the water from one mill to the other, would supply the mills, and the mills would work the pumps. Thus by a kind of perpetual motion, pumps could supply any quantity of agricultural labour, while they would furnish water in any quantity required to irrigate the grounds, and together with the mixture of soils, to convert the worst lands into the best.”

It is not true that any power would be gained: on the contrary, a vast quantity of the original power of the first mover must be lost by this strange contrivance. Water could not, as here supposed, be the first power employed, there being no running stream, and the object being to procure water for ulterior purposes. Wind, steam, vapour, animal strength, &c. must be first applied to raise the water. The quantity of this power will depend evidently on the depth from which

the water is to be raised, the force lost in raising it increasing *much more* than in proportion to the depth, even with the aid of the contrivances of the elastic pressure of the air to keep up and equalize the motion. It would require one hundred times the power to raise water by a forcing pump 100 feet, than it would require to raise it one foot high. But to put the case in the most favourable way possible to the writer, we shall suppose that the water be a standing pool or well just reaching the level of the ground, but not overflowing, and of course requiring no expenditure of force to bring it up from beneath to the surface.

Even in this case, there could be no gain, but the loss of about the third part of the moving power, besides the gratuitous waste of funds in the erection of water-wheels, reservoirs, &c. Say that the prime-mover, whether steam, wind, animal strength, or any other power, is equal to the force of thirty horses. If this force could be applied at once to *any* purposes, agricultural or manufacturing, it will produce about one-third greater effect than if applied to the elevation of water, so as to enable that water to turn a water-wheel, the water-wheel being then used as the moving power. The water raised, even from the level of the ground, and applied to the moving of a water-wheel, will give that water-wheel a force of no more than about two-thirds of the original power, or that of twenty instead of the original force of thirty horses. The luckless experimenter trying the effect on one water-wheel, would not repeat the operation and erect other wheels to be worked by the same water raised by the preceding wheel. The monstrous loss on the first experiment would soon expel the notion of this kind of "perpetual motion" contemplated by the director of industry in the Co-operative Magazine.

But this mistake as to the supposed gain of power is not all. The writer supposes that no prime mover at all is necessary! He says, "*Three or four pumps would supply the mills, and the mills would work the pumps!*" If the notion which he seems to have conceived, that a water-wheel can raise by buckets, or by any contrivance, water enough to keep itself in motion, were true, the consequence of a *perpetual* motion would follow; but not, as he supposes, of an always increasing power. The same force would be merely kept up to, and always expended in preserving itself, no spare force being obtained capable of being applied to any other purpose.

A very slight degree of reflection will show the impossibility, not

to say of increasing but, of preserving its own power by a water-wheel.

The gravitating power, or weight, of water in an overshot wheel, its weight and impulse mixed in a breast-wheel, and its impulse alone (caused by its gravitating force) in an undershot wheel, causing the motion of these wheels respectively, they must raise even in the most favourable, the overshot, an equal weight with that which impels them, in order to maintain merely an *equilibrium*. To get more than an equilibrium, so as to produce continued motion, they must raise, i. e. a lever with equal arms must raise *more* than the weight appended to it—contrary to physical experience. Though a weight will balance its equal, it will not raise that equal : to effect this, an *additional power* is required ; and this power, though slight, must be permanently applied even to continue the raising of the equilibrium. But even if *without friction* a weight cannot lift its equal and can only balance it, what a large reduction must be made for loss from this source ; the loss of course varying with the size and perfection of the machinery.

To show the impossibility of any such continuance of motion, not to speak of gain of power, let any one suppose that the buckets of a water-wheel were so made as not to discharge the water as they come to the bottom, but to retain the water. Who that has ever seen a wheel at work does not perceive that the effect would be to stop immediately the motion of the wheel ? and that, long before the ascending full buckets came on a level with the descending buckets equally full ? It is the escape of the water at the bottom only that gives the wheel power, by making one side of the wheel, or lever, heavier than the other, in order to overcome the resistance caused by the great pressure on the axle from the weight of the wheel above and below.

—Or let any one suspend round the circumference of a wheel equal weights at equal distances, and see, supposing friction to be nothing (which in very small and delicate instruments may be nearly the case), whether any other effect will be produced than simple quiescence, the suspension of all motion.

Were the loss of power from friction, from the superior gravity of the weight to be raised when above the equilibrium, or horizontal position, of an inflexible lever, removed, and were a water-wheel able to raise, not from a distance below in the earth, but merely from its own lower level, enough of water to keep itself or another wheel of equal power in motion, what would be the use of it ? There would

be no additional power applicable to any useful purpose. All the power would be expended in keeping up the "kind of perpetual motion." The only effect would be the idle loss of labour or equivalent expense in making a double set of machines to accomplish the same object which the first moving-power with the first machine would have accomplished.

If a water-wheel could perpetuate its own motion when once set going, it would still be necessary to give it an impulse by the application of some moving-power every morning, as it is not to be supposed that the people would be working day and night, and constant use would increase the wear and tear of the motive machinery. An extra prime-mover to be applied every day would therefore, even in this fanciful case, be requisite in order to remove the necessarily suspended motion.

If the fancy that a water-wheel of any description could raise more than water enough to keep itself in motion were true, we should have at command the means of increasing power indefinitely. So says the writer in the Magazine: he follows his false physical fact into its consequences, and boldly says, "The pumps would supply the mills, and mills would work the pumps," and "the pumps could supply any quantity of agricultural labour." Were this true, where would be the use of steam-engines or any other chemical mode of generating power, rendered manageable and efficient by mechanical contrivances? Where would be the need of a *stream* of water to turn a water-wheel? Where the limitation of power to any given quantity of water? The only limit to the increase of power at will, would be the evaporation of the original bulk of water, and the expense of making and keeping in repair additional water-wheels.

I should not have said so much on a subject which, to all who combine a knowledge of physical facts with their industrial speculations, must appear so trivial, did not our Magazine and Association profess to take the lead in new-modelling the *practical* operations of industry, and were I not aware of great loss, even ruin, to individuals, from want of knowledge of water-power. One person, with a given capital and a given stream of water, fancied that by increasing the diameter of his wheel he would increase its power. In consequence, he made his buildings and machinery on a scale which the limited quantity of the water of his concern was unable to keep at work, and thus lost his property. Another person fancied, with the Magazine writer, that he would increase the power of his wheel by attaching buckets to its

circumference, and causing it thus to throw back into the reservoir a part of the water which moved it :—this gentleman, not proceeding to a sufficient extent in his speculations, suffered loss but not ruin.

Amongst the cheap (sixpenny) treatises already published by the Society for the Diffusion of Useful Knowledge, are two on water-power. Though these treatises are not as practical, as clearly and simply explained, as free from technicalities, as they ought to be, and might be; though they occasionally commit, perhaps through hurry, great errors of statement, and put forth as known a good deal of knowledge, particularly mathematical, with which the readers whom they profess to instruct cannot be supposed to be acquainted, although they constantly reiterate the strange College notion of the superiority of *mathematical deductions* over *experimental demonstration*, though they seem to think that the *primary qualities* of bodies, or any other relations than those depending on number and quantity, can be proved by mathematical reasoning and analogies,—yet will their treatises do great good: they will instruct many in real knowledge, and will lead the way to the production by others of treatises better adapted to the comprehension of those who have yet every thing beyond what the every-day incidents of life afford them, to learn. The utility of such treatises, even to those who have gone through the routine of what is miscalled education, in which so great a portion of life is lost, not in acquiring a knowledge (even useless to the great majority if acquired) of one or two or three dead languages, but in acquiring a disgust of all books and all knowledge, must be apparent from the present communication. In these treatises such persons may learn a knowledge of things and facts (instead of a variety of different *names* for things and facts), and their application to the useful purposes of life: a vast quantity of useful knowledge is condensed in them, too much perhaps for the possibility of elementary illustration, and sold at a wonderfully cheap rate. They will be very useful as text-books for giving lectures at Mechanics' Institutes, Co-operative Communities, or other places for the diffusion of useful knowledge. By bringing together in a small compass all the branches of a subject, they will tend to avert the evils so frequently experienced from partial information on its detached branches. No person will be now to be excused, who, having escaped the nauseating *classical drudgery* of schools (though patronized by the liberal London University, and made an essential of admission to its regular course of instruction and its honours, thus perpetuating as far as in its patronage and power the present system

of killing time and knowledge at school), does not set about beginning himself his real education for the useful purposes of life, by making all the knowledge of these treatises his own, and using them as supports and guides for the further extension of his information.

In the "Library of Useful Knowledge" there is no treatise on water-power, so called. To use plain English terms to instruct English people, might lead the English people to suppose that the learned writers of the treatises never learned Greek; which apprehension would terribly detract from the utility of their labours. Hydrodynamics, with its inaccurate subdivisions Hydrostatics (water-at-rest), and Hydraulics (water-in-tubes), must be put forward to frighten the people with hard words, lest they should not think knowledge and its professors awful enough. Why we English, like the Germans, cannot make our own compound words that every one would understand, seems strange enough; the greater part of our language, too, being derived from the German. Where a new name, or simple word of one idea is to be invented, it signifies not from whence it comes, provided it is short and easily pronounced: but for compound words, where we have already names for the simple ideas, it is surely preposterous to introduce two or more foreign words with a foreign combination. Many persons would open and study a little treatise on Water-power who would turn away from the hard-worded title "Hydrodynamics," as altogether beyond their comprehension.

In the present stage of "Co-operative affairs," nothing seems to me more wanting than *practical* directions for the formation of Communities, avoiding the numerous errors both physical and moral with which such undertakings are beset, as illustrated in the establishments at New Harmony Estate, Orbiston, and elsewhere. Such a work, in about a hundred pages, will shortly appear. We have yet no knowledge of the practical application of our own industrial principles: we have never investigated, nor of course do we agree about, the details of management.

I have the honour to be, Sir, your Friend, and

A FRIEND OF CO-OPERATIVE INDUSTRY.

South of Ireland,

Sept. 12, 1827.

REMARKS.

We have given the foregoing merely because it is an attack on ourselves; and as our South of Ireland Friend has not favoured us

with a title, we have headed it with what we conceived the most appropriate we could think of. Our Friend has certainly displayed a considerable share of engineering science, at least language, in it; and we readily allow ourselves his inferiors in both the science and language; for we do not profess ourselves as having made either, a particular study. Yet we must say that, notwithstanding his being quite at home on this occasion, and though he condemns us with the thorough confidence of profession, we cannot help, somehow or other, suspecting that there may be

“.....more things in heaven and earth
Than are dreamt of in his philosophy,”

or in his share of science, however technically expressed. We must confess also, that notwithstanding our Co-operative feelings, his sorrow we can sympathize in only as far as we are sorry that any person, especially a Friend of ours and of Co-operative Industry, should feel sorrow, particularly sorrow arising from any thing, however otherwise innocent or even beneficial, done by us.

We mentioned what causes him such sorrow as only a “probability,” and threw it out only as an idea, on which some practical or professional men may work or plan. We, also, did not go so far as our South of Ireland Friend indicts us for. He charges us with saying “that the effect may be produced, or the operation performed, more cheaply by the pump and water-mill alone, without either the windmill or steam-engine at all.” Now, what we meant to suggest was only that it may probably be more cheaply effected by the addition of a pump than of a steam-engine to a windmill. What we meant to say was, that “when the French windmill, which performs so much agricultural work, is disabled by a deficiency of wind to operate, the addition of a steam-engine would enable it; and that probably the addition of a pump would be cheaper than that of a steam-engine. We shall at present say, that we venture to imagine our South of Ireland Friend would have been equally strong as at present in his condemnation of us, if we had suggested, before it was effected as it has been by M. Moleré, that a windmill could be brought to plough, to mow, to draw water, to drain, &c. We remember that ten or twelve years ago, when we said that before twenty years the seas also, as well as rivers were then, would be crowded by steam-vessels; and that, probably before half a century,

steam-navigation would entirely supersede sail-navigation,—we were as be-dogmatized and be-flouted, and by seamen too, as we are by our South of Ireland Friend on the present occasion. The laughing at us is scarcely yet over for saying, that steam-travelling and steam-carriage by land would be brought to, at least, as great perfection as by sea; and that all horse-work,—at least, all but for pleasure, would be superseded: and we have had the jest and the sneer of the confident and practical at our expense on that occasion as authoritatively as on the present.

But perhaps our South of Ireland Friend will say, that our suggestion, even as we explain it, is absurd and ridiculous; for that the addition of a steam-engine would be cheaper than that of a pump in our “strange contrivance.” Not being professional or scientific mechanists or hydraulists, we will not enter the lists with him on this point. If, however, he does not decide that the invention of Mr. Cooper’s *Rotatory Piston*, mentioned in our Magazine of October, is entirely fictitious and physically impossible, perhaps he may allow that a water-engine may be applied as cheaply as a steam-engine on the occasion. Sir William Congreve, we think, says somewhere; “It is sufficient to prove the existence of a very considerable moving force, being the 150th part of the whole weight to be set in motion—a power, the sufficiency of which to keep matter in motion in a variety of ways, with a considerable excess to spare, will not be doubted, when it is remembered that many of the largest scale-beams, with a *ton in each scale*, may be moved by *much less than an ounce in weight*.” If what Sir William says be true—and he seems to speak from fact, as well as to be generally acknowledged to possess some mechanical science,—perhaps our South of Ireland Friend may suspect that some more powerful water-engines may possibly be yet invented than even he has heretofore contemplated; and that if by any “contrivance,” however “strange,” an *ounce weight* could be made to give motion to even a fortieth part of *two tons* of water, the performance of most of our agriculture by means of water may not be so absolutely impossible. We have somewhere read too, we imagine, that bare boring, deep enough of course, would bring water to the surface in any situation; and we believe it has been proved to do so in many places. If then, to those borings Mr. Cooper’s Rotatory Pistons were added, we hope it is not boring our Friend’s patience too much, to suggest that a great power would be

procured; and that it may be worth while to make an experiment of such a "strange contrivance," to supersede horse-work entirely, and human work almost entirely in agriculture, even though "it could give a water-wheel a force of no more than about two-thirds of the original power." Even if ten hundred weight could impel water to act on the first water-wheel, at the rate of only a fortieth part of the force of an ounce's impelling *two tons*, and at the rate of two-thirds of that force on the second water-wheel, of one-third on the third, and of one-sixth on the fourth; perhaps our Friend would consent to admit that "the experimenter," who should effect this, may not be altogether so "luckless." Yet, for our part, we do not perceive the absolute necessity of the impelling force's becoming so much less.

Our Friend, also, may perhaps concede that the benefit of irrigation or watering to lands and crops would be worth something. This benefit, at least, "the Director of Industry in the Co-operative Magazine," (as our South of Ireland Friend is pleased to entitle us,) did in his suggestion "contemplate;" and this may, in some degree, compensate "the monstrous loss," if necessary, of a third part of the first power, one very successive wheel, and make this "loss on the first experiment" not so "soon expel the notion of this kind of perpetual motion" as our Friend chuckles at "contemplating" it would.

He goes on to say, that we "supposed no prime mover at all was necessary." Godwin conceives, in his "Political Justice," that the time will arrive, when we shall have only to desire the plough to go into the field, and we shall have the field ploughed up. His prime mover, the desire, probably our Friend may conceive the plough would not be always very punctual in obeying; and he may fancy Mr. Godwin somewhat imaginative in expecting the plough would be so sensible of its duty. But he represents us as more highly imaginative still. He says that "we suppose no prime mover *at all*," not even the desire, "is necessary." Yet we will be content to take a something lower flight than Godwin on this occasion. We cannot help considering the windmill a little further from "*no prime mover at all*," a little more powerful and apt to be obeyed than "the desire," in this instance. The windmill would have the wind as a prime mover; and would, in turn, be itself a prime mover to the pump and the plough, while the wind would not be, as Shakespeare

charges it with being, "the idle wind;" and the water, which, by the prime-movance or agency of the windmill, the pump would bring up and deposit in a reservoir, would be a prime mover to the pump and the mill that would drive the plough, when the wind would be idle.

But perhaps our South of Ireland Friend considers that water can be "*no prime mover at all.*" On the present occasion, at least, he is positive, "it could not." And why so? "Because there is no running stream." But is there no such thing as rain? and are there no such "contrivances, strange" though they may be, as reservoirs to catch and retain the rain till great stores of water may be collected? Might we not, then, even without the windmill at all, have a prime mover? and, if every ounce of water filling a reservoir of only ten feet diameter, could by any "strange contrivance," such as that of the large scale-beams alluded to by Sir William Congreve, or Mr. Cooper's Rotatory Piston, give motion to but a *hundred weight* instead of *two tons* of water, might we not have, for a season at least, a sufficient prime mover for mills enough to cultivate five hundred acres.

Besides, our Friend grants, that "if a water-wheel could raise, by buckets or any contrivance, water enough to keep itself in motion, the consequence of a *perpetual* motion would follow." Now, as we have said before, it is proved that mere boring brings up water, to the surface, at least in most situations. Sir William Congreve says, that 150th part of the weight to be set in motion is sufficient to set in motion the weight. "The strength of four men is sufficient to make Mr. Cooper's Rotatory Piston throw constantly a stream of eight inches broad and three quarters of an inch in thickness, 120 feet distance in a straight line, and more than 90 feet perpendicular height. The volume of water raised by it at a single turn surpasses, it is said, that of the whole machine itself." With those facts before us, then, we must, notwithstanding all our Friend's display of mechanical and hydraulic science, hesitate before we can come into his conclusion—that "it is impossible for a water-wheel," or water-machine, by any contrivance, "to preserve, or still further to increase its own power," when once set in motion, as it could be by the rain water collected in a reservoir.

We cannot here refrain from quoting to our friend a short passage from Robert Fulton's letter, which we gave in our last Number. "The morning," he says, "I left New York" (in my steam boat) "there

were not perhaps *thirty* persons in the city thought that the boat would ever move one mile an hour, or *be of the least utility*. And while we were putting off from the wharf, which was crowded with spectators, I heard a number of sarcastic remarks. *This is the way, you know, in which ignorant men compliment what they call philosophers and projectors.*" A shorter passage from a letter from Mr. Perkins *, given in a subsequent page, may appear somewhat apposite also. "For the last three months," Mr. Perkins says, "*many of,*" even "*the ENGINEERS,*" (and they probably thought themselves as much at home as our South of Ireland Friend considered himself) "*had declared me insane,* as I had asserted that I could condense and produce a vacuum under the piston, without either an air-pump or condensing water ; but now the tables are turned, and my triumph over those who have assailed me is complete."

Our Friend's lamentation over the defect of education in the point which he alludes to, as well as in our not imitating the Germans in making our compound words from our own language, rather than from the Greek, we partly join him in. "Water-in-tubes," however, we do not think would fully convey the meaning of Hydraulics. Water-tube-conveyance perhaps may answer better.

On the utility of "*Practical Directions for the Formation of Communities,*" we fully concur with him. We are glad to hear that "*such a work, in about a hundred pages, will soon appear.*" Such a work, if founded on accurate calculations for the present day, will certainly for the present day be highly beneficial ; though in ten years hence, many of its calculations will, without doubt, be obsolete.—ED.

THE LATE MR. ABRAM COMBE.

[Concluded from page 520.]

He possessed from nature a talent for imitation, and a keen sense of the ludicrous. These he applied in satirising, often with great severity, all those whose conduct or manners differed from the standard

* This letter was given to our printer ; but want of room compels its postponement till next month.

which appeared to him to be that of propriety. He wrote verses also, full of point and drollery. One stanza on a village poet who wore excessively long hair, may be cited as a specimen:—

“ Oh Nature! say, in what untimely hour
Upon this poet's numskull thou didst shower
Such an excrescence of black bushy hair,
As if to shield the brains that are not there.”

He was the author also of a parody of “The Man of Thessaly,” which, connected with the Phrenological controversy, subsequently made the tour of the globe in the English newspapers, and was translated on the continent, and reprinted in the United States.

Between 1807 and 1820, at which last period a new direction was given to his faculties, he pursued his personal interests with the usual degree of ardour displayed by manufacturers and merchants, and his benevolence evaporated in a general wish for the welfare of mankind, which led to no active measures for promoting their enjoyment. As he was always scrupulously just, and had discernment enough to discover that self-interest in trade is best promoted by fairness and liberality, those who knew him only in business were less sensible of any change in his dispositions in the latter years of his life; but by his relatives his affections were regarded during this interval as rather exclusively concentrated in himself and his own family; and he was looked on as sympathizing but little with the good or evil that befel others. He was then a firm believer in the doctrine that men formed their own characters and dispositions; and hence, when any one acted contrary to what he conceived to be right, he did not spare severity of remark on his conduct. At the same time he was far from malevolent; and if he could benefit any one whom he liked, without injuring himself, he readily did so. He was fond of the country, and engaged with keen relish in rural excursions. He was an enviable companion on these occasions, as his cheerfulness and humour kept the party in a pleasing excitement for days in succession, without becoming tiresome, or approaching to common place. The theatre also was a great field of interest to him in winter.

In October 1820, he made an excursion to Lanark, and was introduced to Mr. Owen. He heard this gentleman expound his views about the formation of character—the defective institutions of old society—the advantages of co-operation—and the great imperfections in the common systems of education; he saw the schools at New

Lanark, and beheld with great interest the children clean, cheerful, and intelligent; he contrasted the views presented to him with his own past experience and observations, and retired deeply impressed with the idea that there must be important errors in the principles and practices of society, as generally constituted, which occasioned the misery every where abounding, and much gratified with the prospect of brighter scenes held forth by Mr. Owen. The effect produced on his mind was deep and permanent. For some time he merely related what he had heard, and described what he had seen, without announcing any decided opinion of his own; but after months of consideration, and hearing Mr. Owen again, and reading his works, he at length became a complete convert to his views. With him conviction and practice were closely connected; he first became a zealous advocate of the new views in conversation and by the press, and thereafter assisted in setting on foot a co-operative society in Edinburgh, as nearly on Mr. Owen's principles as was compatible with external circumstances. The society opened a store for the sale of the necessities of life on as low a profit as would suffice to defray the necessary expenses of the establishment: they met in the evenings for mutual instruction and social enjoyment; conversation, music, and dancing constituted their amusements; abstinence from spirituous liquors, tobacco, and profane swearing were conditions of admission; and a school, on the plan of those at New Lanark, was established for the children. At first, the society prospered amazingly. The members, full of moral enthusiasm, experienced delightful emotions, and anticipated vast advantages; some conceived that earth was immediately to be changed into heaven, and that sin and sorrow were about to be banished from the land.

Mr. Combe himself was sanguine of great results; and at this time took a bet with a friend, that within five years the Royal Circus, then the most splendid residence in Edinburgh, would be voluntarily pulled down by its proprietors, and converted into Communities on the new principles. A great revolution took place in his mind. He became the sincere advocate of the doctrine, that the characters of men are formed by their natural constitutions and external circumstances. While he regarded men as free agents, (meaning by this expression, beings who could adopt whatever modes of feeling, thinking, and acting they choose,) he was a severe satirist of their faults, but thought it quite unnecessary to pursue any other means for their reformation,

beyond expressing his contempt or disgust at their actual conduct. When converted to the New Views, he regarded every man as unfortunate, in proportion to his moral debasement and intellectual ignorance; and extended towards him an active sympathy, not only forgiving offences towards himself, but sedulously elevating his moral and intellectual nature, in unhesitating conviction that if he succeeded in improving the mind of the individual, more perfect actions would necessarily follow. Under his old notions he preferred his private interests to all others; and among those who knew him best, he was regarded as selfish rather than generous. After the change in his sentiments, he openly professed the belief that the active pursuit of the welfare of others constituted man's first duty and happiness; that this was also the true way of attending to his own interests; and he boldly practised his precepts. We know from the best sources of information, that a number of his relatives who had stood on a footing of little more than acquaintanceship with him before, now felt his whole character change: formerly they dreaded his lash; now they found his affections overflowing on them: formerly they were averse to have pecuniary transactions with him, on account of his sharpness; now they considered him too indifferent to his private interests: formerly he wrote satires, epigrams, and lampoons; now he devoted himself to the composition of precepts of universal benevolence and justice: in short, a change of character resembling that usually styled "conversion," was in his case undeniable. He carried his principles so far that he gave up the use of animal food and fermented liquors: and the theatre became to him an object of dislike, on account of the low motives and false maxims which abounded in dramatic pieces, and which he now felt to be offensive to his moral sentiments.

The Practical Society in Edinburgh was instituted at a time of great depression among the labouring classes, and its members besides were wholly unprepared for undergoing so great a change as would have been implied in its complete success. After trade became brisk, and the first impulses of enthusiasm had subsided, the society languished, and ultimately expired. Mr. Combe expressed no disappointment at this result, but proceeded with unabated confidence in the soundness and efficacy of his principles, and professed to have been benefited by the experience which he had gained. Reports of "The Economical Committee of the Practical Society" were printed, dated February and April 1822; but they contain chiefly expositions of the principles

of the society, and no detail of its experience. Mr. Combe's next step was to try the experiment of a community on a small scale. He erected dormitories, a kitchen, and other apartments in his tan-work; induced his workmen to occupy them, and live in common; furnished a stock of bark and hides to be converted into leather by their labour, and agreed to share the profits with them, so as to give them one interest with himself. The individuals thus brought together, however, like those who constituted the Practical Society, were unprepared in their mental habits for their new condition; and the scheme soon fell to the ground of itself. Mr. Combe still assured his friends that he was not disappointed at this result, and that he had gained further insight into human nature, which only increased his conviction of the superiority of the new system.

He continued, at the same time, to publish short and practical treatises on the subject. In 1823 appeared "An Address to the Conductors of the Periodical Press, upon the Causes of Religious and Political Disputes;" also "Metaphorical Sketches of the Old and New Systems, with Opinions on Interesting Subjects." In 1824 he published "The Religious Creed of the New System, with an Explanatory Catechism, &c." These works are replete with meekness and charity; contain many practical remarks of great importance; and are composed in a clear, forcible, and didactic style.

In co-operation with A. J. Hamilton, Esq. of Dalzell, and several other benevolent individuals both in England and Scotland, he, in 1825, set seriously about trying the experiment of the New System on an extensive scale. They leased the estate of Orbiston, containing 291 statute acres, and lying nine miles east of Glasgow, and almost contiguous to the south road from that city to Edinburgh, for a price of 20,000*l.*: they erected extensive buildings, capable of accommodating upwards of 300 individuals, with public rooms, store-room, and other conveniences for common occupation; and also a manufactory on the Calder river, which bounds the property on the south-east. On 10th November, 1825; No. I. of the present Register was published, in which, and subsequent numbers, the principles, practice, and experience of the Community established at Orbiston are fully detailed; and which it is superfluous to repeat here, being familiarly known to our readers. Suffice it to say, that Mr. Combe assumed two co-partners into his business in Edinburgh, removed with his family to Orbiston, devoted his whole time and exertions, and by far

the larger portion of his property to the undertaking, and sought his reward in the delightful feelings excited in his own mind by practical benevolence, and the prospects of success which continued to animate him to the last moment of his life.

Too soon, however, was the grave destined to close upon his exertions. The labour and anxiety which he underwent at the commencement of the undertaking, gradually impaired an excellent constitution, which, too, had been weakened by his previous temporary abstinence from animal food. Without perceiving the change, he, by way of setting an example of industry, took to digging with the spade, and wrought for fourteen days at this occupation, although for a long time previously unaccustomed to labour. This produced hæmoptysis, or spitting of blood from the lungs. Being unable now for bodily exertion, he dedicated his time to directing and instructing the Community, and for two or three weeks spoke almost the whole day, the effusion from his lungs continuing. Nature rapidly sunk under this erroneous mode of proceeding ; he became breathless and weak, and at last came to Edinburgh for medical advice. When the structure and uses of his lungs were explained to him, and when it was pointed out that his treatment of them had been equally injudicious as if he had thrown lime or dust into his eyes, after inflammation, he was greatly amazed at the extent and consequences of his own ignorance, and exclaimed, " How greatly he would have been benefited, if one month of the five years which he had been forced to spend in a vain attempt at learning Latin, had been dedicated to conveying to him information concerning the structure of his own body, and the causes which preserve and impair its functions ! " He was ordered merely to give his lungs repose ; that is, to avoid walking, speaking, and stimulating food : and by following this course for a fortnight in Edinburgh, he returned to Orbiston greatly recruited, and with the symptoms of disease evidently diminished.

He continued, on the whole, to improve in health, till towards the end of August, 1826, when he was overtaken in the manufactory at Orbiston, then roofed in, but not fitted with windows and doors, by a heavy rain. Afraid of getting wet, he stood for upwards of two hours exposed to a cold wind whistling through the building ; and very soon afterwards felt himself worse. He again proceeded to Edinburgh, and had just been one day in his brother's house there, when he was seized with violent inflammation of the lungs. With much difficulty

this was subdued, but he never recovered his strength, nor was able to leave Edinburgh.

His sufferings, during the inflammation in September, 1826, were very great, and he said every day appeared like a fortnight in length; but in the greatest pain he never for a moment lost his equanimity, or wavered in principles. Indeed, his mind seemed interested in applying the latter to his circumstances as the prospect of life or death alternately cheered or darkened the horizon. When in great uneasiness, he said—"Philosophers have urged the institution of death, as an argument against divine goodness; but not one of them could experience for five minutes the pain which I now endure, without looking upon it as a most merciful arrangement. I have departed from the natural institutions; but, in death, I see only the Creator's benevolent hand stretched out to terminate my agonies, when they cease to serve a beneficial end." After recovering from this attack, he suffered little pain, except on two nights, when he became exceedingly breathless. A few days before his death, he told his brother that he had been inquiring of the doctor whether the pain of dissolution would be very severe. "If it were not to be worse than the inflammation and the two breathless nights, I think I could bear it." The doctor told him, that it would not be nearly so severe, and that in all probability he would sleep away without feeling the change. "If that shall be the case," said Mr. Combe, "I shall be very happy; for, except on these three occasions, my illness has really been far less painful than you would think. Laudanum is a blessed medicine; for often in the morning when I have been told that I had had a very restless and weary night, I have said that it might be so, but I knew nothing about it; in fact, I had been quite unconscious of every thing."

He frequently spoke of his past life, and approaching dissolution; and on many occasions said, that "the last five or six years of his life, during which he had been actively engaged in promoting the welfare of others, had been truly delightful: that all the previous part of it, when he acted on the selfish system, had been comparatively dreary and barren; and that were his life offered to him over again, exactly as it had already been spent, he would cheerfully accept the latter part of it, but would decline the first." He was waited on by some pious individuals, and particularly by one of the

clergymen of Edinburgh, who conversed with him about his religious opinions and his dying prospects. He did full justice to the kind motives which had prompted their visits, but maintained calmly and firmly his own principles. In reporting the conversations with them, he said that he had abstained from stating his opinion of the errors under which they appeared to him to labour, as he did not wish to cause them pain. He was very anxious not to be misunderstood or misrepresented on this point; and on the 9th of August, about thirty-six hours before his death, he dictated to his eldest son, a boy of thirteen years of age, the following words, as his dying testimony:—

“The long period during which I have been afflicted, has given me ample opportunity to contemplate the past doings of my life, and these contemplations, so far from having been painful, have enabled me to say, that if *any* epitaph is written on me, it may be simply this—

‘THAT HIS CONDUCT IN LIFE MET
THE APPROBATION OF HIS OWN MIND AT THE
HOUR OF DEATH.’

“I have compared the effects of the Old System with those of the New; and I have also compared and examined the characters which both systems have produced; and I am quite satisfied that the New System is much superior to the Old. Under the Old, we really see through a glass darkly, and know even as we are known. But under the New, a very short time makes us see face to face. This has been proved at Orbiston beyond a shadow of a doubt. Men who came there with many professions, have had these professions dissipated, and themselves rendered objects of pity in the eyes of the community; while others who have made no such professions, have become objects of general esteem. In fact, the laws of Nature continue to act, let us do as we may. Feelings and actions like those manifested by A. J. Hamilton, create general esteem among all rational creatures, whether they will or not; and so it is with Robert Owen, and all who devote their labour and means for the benefit of their fellow-creatures.”

He dictated also an account of his disease, that it might be useful in enabling others to avoid similar calamities; and attributed his

death to his ignorance of the natural laws on which the health of the body depends. After alluding to the circumstances already mentioned, he says, that at length an "ulceration in the lungs became manifest. This burst with so much violence, that I lost all hope of future amendment. I, however, did continue rather to amend, until after a second or third attack, when my strength appeared gradually to give way. Reduced to the lowest ebb is the condition in which I now write, unable to cross the room from deficiency of breath, and subject to a severe cough, which afflicts me both night and day, without any prospect of relief but in that of dissolution.

"I have mentioned these things because I believe that there are many of my fellow-creatures totally unaware of their existence, and consequently of the way to avoid them; and I cannot help being sorry that the time which is spent in what is called 'spiritual instruction,' had not, in my case, been devoted to such subjects of knowledge as I have already referred to. My spiritual instructors have acted with good intention, but, I fear, neither wisely nor judiciously."

The last date of this paper is the 7th of August, 1827. During his illness in September, 1826, he had made similar remarks, but then alluded to his education at the High School as his misspent time: the reference to his spiritual instructors, on the present occasion, probably owes its origin to the visits which he had then recently received.

For some months before his decease, he had embraced every opportunity of conversing about Orbiston with Mrs. Combe, and such of his friends as he knew to take an interest in it, and expressed his conviction of its success to remain firm and unaltered. He spoke in the same terms to his eldest son, and pointed out the advantages that would attend it; and, in short, showed at all times that it was the leading object of his thoughts and affections.

On the morning of the 10th of August, he was seized with a fit of weakness, approaching nearly to fainting, in which he thought he was dying; and as he felt no pain, his eye beamed with joy, and his countenance expressed the most serene placidity. On recovering, he said that he "was disappointed at finding himself here again; that he thought himself off, and was happy that he had arrived at the end, and would occasion no further trouble; for he felt he had been a heavy burden." Mrs. Combe remarked that the trouble he

gave to others need never cause him a moment's uneasiness, for it was the highest consolation of herself and relatives to afford him every solace. This expression deeply affected him, and as soon as he had gathered a little strength he dictated to his son a most endearing testimony of respect and affection for his wife, and several of his female relatives who had been particularly attentive to him; returned them his warmest thanks, and used the last effort of remaining strength to append to it his signature, "Abram Combe," and then waited patiently for death. In the course of the same day he repeated his entire satisfaction with Orbiston, and spoke of the happiness that he then felt from what he had done for others. On the afternoon of the same day, one of his brothers told him that Mr. Owen was hourly expected in Edinburgh, and had expressed his ardent wish to see him. Mr. Combe's countenance kindled into new vigour at the prospect, and he said he should feel much gratified in seeing Mr. Owen before he died. He spoke of Orbiston with all his wonted warmth and confidence of success; and with much affection and esteem of the friends who had joined with him in promoting the undertaking. He delayed taking his sleeping-draught till nine o'clock that night, expecting Mr. Owen to call; and in drinking it said, he should last over this night, but not another. In the morning, he was still quite sensible, and spoke of breakfast. Before it was ready, he was seized with a second fit of weakness, and expired, apparently without pain, at half-past eight, of the morning of 11th August. Mr. Owen called six hours after he expired, and greatly regretted the detention which had prevented him bidding his friend and follower his last adieu.

Some weeks before his own death, Mr. Combe heard of the decease of a relative, whose body had been opened to ascertain the nature of his disease, and said to his sister who was then with him, "it was very proper to open him. If I could, by possibility, be present at my own dissection, I would give my hearty consent to it." His body was opened accordingly, and the right lung found deeply diseased, while the left, and all the other viscera were in a healthy condition; confirming thereby, the fact that the disease was not constitutional consumption, but owed its origin to external causes.

INVENTIONS AND IMPROVEMENTS.

MODE OF PRESERVING CABBAGES DURING THE WINTER.—When they have arrived at full maturity pull them up with the roots, reverse their crowns, and cover them up, by digging a trench on each side, and laying the earth over them till nothing but the roots are seen above ground. In this situation they will require much less ground, and the exposure of the earth of the ridgelets thus formed will be an excellent winter fallow. Before burying them, of course, all decayed leaves must be removed. In this way I have secured my winter supply for several seasons; and one season most providentially against an inroad of cattle, which in a few nights destroyed the whole winter stock of green vegetables, excepting a few dozen of the cabbages trenched in as above described.—*W. M. Argyleshire, Jan. 28, 1827.*

POTATOES.—A POTATOE is at present growing in the garden of Mr. James Low, North Berwick, from a tuber that was planted whole, the stems of which cover closely a space of ground six feet eight inches diameter, or forty-four feet three inches four parts square. It is likely the gross produce will be made known to the public.—*Scotsman, Sept. 8.*

A SINGLE GRAIN OF WHEAT, thrown by accident over a hedge into a garden at Waterbeach last autumn, has produced thirty-eight ears, containing on the average, fifty-one grains in each, or, in the whole, above nineteen hundredfold!—*Scotsman, Aug. 22.*

STEAM ENGINE.—It regulates with perfect accuracy and uniformity the number of its strokes in a given time, and it counts and records them as a clock does the beats of its pendulum: it regulates the quantity of steam admitted to work; the briskness of the fire; the supply of water to the boiler; the supply of coals to the fire: it opens and shuts its valves with mathematical precision as to time and manner; it oils its joints; it takes out any air which may accidentally enter into parts that should be vacuum; it warns its attendants by ringing a bell when any thing goes wrong which it cannot of itself rectify: and with all these talents and qualities, and though it have the power of six-hundred horses, it is obedient to the hand of a child. Its aliment is coal, wood, charcoal, or other combustible; it consumes none while idle: it never tires, and wants no sleep; is not subject to malady when originally well made, and only refuses to work when worn out with age: it is equally active in all climates, and will work at any thing. It is a water-pumper, a miner, a sailor, a cotton-spinner, a weaver, a blacksmith, a miller,—indeed it is of all occupations; and a small engine in the character of a steam pony may be seen dragging after it on a railroad ninety tons of merchandise, or a regiment of soldiers, with speed greater than that of our fleetest coaches. It is the king of machines, and a permanent realization of the genii of Eastern fable, whose supernatural

powers were occasionally at the command of man.—*Arnott's Elements of Natural Philosophy.*

CLOTHES.—The editor of the *Farmer's Journal*, describing the quality of some cloth manufactured from British wool, states that “the blacks will bear comparison with the finest we have ever worn; and, though much is said, and will be said, by the sceptical, we are certain that any tailor can foist this cloth upon any unlearned customer as superfine Saxon. One yard and three quarters will cost 21s.” Supposing the expense of making to equal the cost of the cloth, a coat may be procured for two guineas.

POTATOE FLOUR, with Directions to Private Families for making it in an easy and economical Manner.—Wash the potatoes, and peel them in the usual manner, then grate them through a common tin grater (such as is used for bread) into a pan of clean soft water; place a cullender with a common cheese-cloth over it in another pan, and pour the water with the grated potatoes into the cheese-cloth, and strain as much of the grated potatoes through the cloth as you can, squeezing the cloth with your hands. That which remains in the cloth to be put into a pan and mashed up with a little more water, and then to be submitted to a second straining and squeezing. The farinaceous part of the potatoe, nearly the whole of which is now in the water, and in a state of the most minute division, must be allowed to settle at the bottom. This will take place in about the space of an hour, when the water must be carefully poured off. Then add a second quantity of pure water to the potatoe, suffer it to remain an hour as before; then pour off the water. This may be sufficient, but another course of water will help the quality of the flour, and make it whiter. When the water is poured off for the last time, turn the whole of the pulp of the potatoes on a large open dish, and put it immediately before a good clear fire. It must be constantly stirred and beat abroad till quite dry. The product will be potatoe flour, fully equal in appearance to the best foreign arrow-root, and scarcely distinguishable from it when prepared in the usual way. The result of frequent trials is, that 6lb. of potatoes in the raw state, will yield 1½lb. of flour, or arrow-root as it is termed; the cost of which, at the present price of potatoes, 5s. per sack, is exactly 1½d. for 1½lb. or but little more than 1d. per lb. being beyond all comparison the cheapest farinaceous substance that can be procured; and it is also capable of being applied in a greater variety of ways, and more advantageously, than almost any other article we have. It will, however, be found peculiarly valuable in affording at the most trifling cost a highly nutritious breakfast; and for children and invalids an excellent supper when mixed up with a little milk and sugar, or whatever else may be preferred. For breakfast mix up a table-spoonful, first in a very small quantity of cold water, then put it into a pint of milk and water, equal quantities of each, with a tea-spoonful or two of cocoa paste; put the whole over the fire, stirring it constantly till it thickens, and you have in a

few minutes, a very palatable and excellent breakfast. A little sugar can afterwards be added to advantage. The potatoe flour can also be used most advantageously in making various kinds of puddings, especially batter-puddings and cakes, either by itself, or with common flour, rice, or even with mashed potatoes that have been boiled in the usual manner; and as the cost does not much exceed one-fourth part of the price of wheaten flour, the saving in a large family in the course of a twelvemonth is very considerable. The peculiar excellence of this mode of preparing the potatoe flour is, that one of our most staple articles of food, which is of so perishable a quality that a great loss invariably attends keeping it through even a season, is thus at once, before any decay has taken place, converted into a substance which may be safely kept any length of time that may be required. The process of drying the pulp before the fire should commence immediately the water is poured off.—*Reading Mercury*.

THE ALTERNATION OR SUCCESSION OF CROPS, found to be of so much importance both in gardening and agriculture, has been proved to be a general law of nature, by M. Dureau de la Malle, in the *Ann. des Scienc. Nat.*, tom. v. p. 553, Août, 1825. The facts which he brings forward are perfectly consistent with the experience and observation of various naturalists and cultivators. The botanist Ray observed, after the great fire of London in 1666, that *Sisymbrium Irio* sprung up among the ruins, where it had never been seen before: and Professor Pallas, in the end of last century, observed in Russia, that when pine forests were destroyed by fire, they were not succeeded by the pine or fir tribe, but by wild service, birch, lime, poplar, and analogous trees. Dr. Dwight also, in the beginning of the present century, found that his grandfather's field near Northampton in Pennsylvania, which a century before was covered with oaks and chestnuts, after being under the plough for two generations, and then left to itself, brought forth a thick grove of white pines, without a single oak or chestnut-tree. From the various instances, both of herbaceous and ligneous vegetables, adduced by M. Dureau, he concludes that the succession of plants is a fundamental law of vegetation in a state of nature, and that its imitation by art in our fields, gardens, and woods, is of the first importance.

STEAM COACHES.—Several private companies have been entered into, for the purpose of running steam coaches on the different roads leading to and from London. A company at Manchester intends running them at the rate of 12 miles an hour. A very serious question is expected to be started on the running of these coaches, namely, whether they shall or shall not pay toll at the turnpikes, and if so, at what rate they shall be charged.—*New Times*.

END OF THE SECOND VOLUME.

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